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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,327	09/11/2003	Eiichi Ishii	2003-1290	3781
513	7590	09/11/2006	EXAMINER	
WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021			WILKINS III, HARRY D	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 09/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

3

<b>Office Action Summary</b>	<b>Application No.</b> 10/659,327	<b>Applicant(s)</b> ISHII ET AL.	
	<b>Examiner</b> Harry D. Wilkins, III	<b>Art Unit</b> 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/902,260.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al (US 5,466,305, the US equivalent of JP 07-090542).

Sato et al teach (see abstract) a method of treating pure titanium or a titanium alloy by plasma carburizing at 0.5-15 Torr (66.66-2000 Pa). Sato et al teach (see col. 3, lines 53-54) that the carburizing atmosphere was 100% propane ( $C_3H_8$ ), where the molar ratio of H/C is 2.67. The method includes (see col. 1, lines 64-66) heating to 700-1100°C. Thus, Sato et al teaches an overlapping range for the pressure of the plasma carburizing treatment and an H/C ratio that is within the claimed range. See MPEP 2131.03.

However, Sato et al fail to meet the claimed temperature range for the plasma carburizing treatment. Nonetheless, the claimed temperature range of 400-690°C would have been obvious to one of ordinary skill in the art because the prior art range is close enough, e.g.- 700°C vs. 690°C that it would have been expected to have the same results. If range of prior art and claimed range do not overlap, obviousness may still exist if the ranges are close enough that one would not expect a difference in properties. *In re Woodruff* 16 USPQ 2d 1934; *Titanium Metals Corp. v. Banner* 227

Art Unit: 1742

USPQ 773 (Fed. Cir. 1985); *In re Aller* 105 USPQ 233 and MPEP 2144.05 I. In the instant case, the difference of 10°C in the plasma carburizing temperature is deemed not to be significant. However, Applicant can overcome this rejection by showing that the present invention produces results that are different from the closest prior art, i.e.- Sato et al with plasma carburizing at 700°C.

Regarding claim 2, Sato et al teach (see col. 1, line 64 to col. 2, line 10) that the method of includes heating to a temperature, exposing the titanium metal to a cleaning gas such as hydrogen and applying a DC voltage of 200-1500 V in order to eliminate oxides and other contaminants on the surface of the titanium. After this, the titanium metal is subjected to plasma carburizing as discussed above.

### ***Response to Arguments***

3. Applicant's arguments filed 24 July 2006 have been fully considered but they are not persuasive. Applicant argued that:

- a. The specification teaches that at temperatures below 700°C, sooting tended to occur due to carbon ions becoming amorphous.

In response, Applicant has failed to show the criticality of the differences in processing at 700°C and at 690°C. Applicant's remarks are not persuasive absent a showing of the differences with data. Applicant has not proven that sooting would have occurred at temperatures below 700°C.

- b. Propane does not have a molar ratio within the presently claimed range.

In response, the Examiner is unclear how a *molar* ratio of H atoms to C atoms requires the use of the total *weight* of H atoms and C atoms. Applicant appears to be confusing molar ratio with a weight ratio.

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

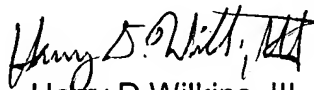
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1742

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Harry D Wilkins, III  
Primary Examiner  
Art Unit 1742

hdw